Report of the Small Business Advocacy Review Panel On the Draft OSHA Standard for Electric Power Generation, Transmission, and Distribution

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1. Introduction

This report has been developed by the Small Business Advocacy Review Panel (the Panel) for the draft OSHA standard for Electric Power Generation, Transmission, and Distribution. The Panel included representatives of the Occupational Safety and Health Administration, the Office of Advocacy of the Small Business Administration, and the Office of Information and Regulatory Affairs of the Office of Management and Budget. On May 1, 2003, the Panel Chairperson, Robert Burt of OSHA, convened this Panel under section 609(b) of the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA). A list of the panel members and their affiliations is included in Appendix A.

This report consists of four parts, including this introduction as Part 1. Part 2 provides background information on the development of the draft proposal, describes the requirements of the draft proposal and potential alternatives, and identifies the small entities that would be subject to the proposal. Part 3 summarizes the oral and written comments received from the small entity representatives (SERs) who reviewed and submitted comments on the draft; a list of the SERs designated by the Panel is included in Appendix B of this report, and a complete copy of the written comments submitted by the SERs is included in Appendix C of this report. Part 4 presents the findings and recommendations of the Panel.

2. Background

OSHA intends to revise the standards addressing the work practices to be used, and other requirements to be followed, for the operation and maintenance of, and for construction work involving, electric power generation, transmission, and distribution installations. The existing rules for this type of work were issued in 1972 for construction work and in 1994 for work covered by OSHA's general industry standards. The construction standards, in particular, are out of date and many are inconsistent with the more recent, corresponding general industry rules for the operation and maintenance of electric power generation, transmission, and distribution systems and industry practice.

The new requirements associated with this rulemaking can thus be divided into two parts. First, the existing standards applicable to work covered by general industry, including repair and maintenance work, will be extended to cover construction work. Second, several provisions will be added or revised to improve and update the standards for both general industry and construction work.

Overview of Existing General Industry Requirements to be Applied to Construction

Existing §1910.269 contains requirements for the maintenance and operation of electric power generation, transmission, and distribution installations. Section 1910.269 is primarily a work-practices standard. Its requirements are based on recognized safe industry practices as reflected in current national consensus standards covering this type of work, such as the National Electrical Safety Code (ANSI/IEEE C2). OSHA promulgated this standard in 1994.

Section 1910.269 contains provisions intended to protect employees from the most serious hazards they face in performing this type of work, primarily, those causing falls, burns, and electric shocks. The requirements in this standard cover training and job briefings, working near energized parts, deenergizing lines and equipment and grounding them for employee protection, work on underground and overhead installations, work in power generating stations and substations, work in enclosed spaces, and other special conditions and equipment unique to the generation, transmission, and distribution of electric energy.

The training and job briefing requirements of the existing general industry standard ensure that employees have the expertise and knowledge necessary to work safely on electric power generation, transmission, and distribution installations. The provisions for working near energized parts of electric circuits protect employees by requiring them to wear appropriate electrical protective equipment, use special insulating tools or equipment, or maintain safe distances from exposed energized parts. These provisions protect employees from electric shock and burns.

The existing general industry standard includes requirements on deenergizing and grounding lines and equipment to prevent them from becoming accidentally reenergized and to protect employees in the unlikely event that the lines or equipment do become reenergized (for example, because of lightning or contact with other energized circuits). Requirements for working on overhead installations include provisions for protecting employees from falls. Requirements for working on underground installations include provisions for protecting employees from hazardous atmospheres. Provisions on electric power generating stations and substations protect employees from the hazards that occur in those types of installations. For example, some of the requirements for coal-handling areas protect employees from fires and explosions.

OSHA is also proposing to extend its general industry standard on electrical protective equipment to the construction industry. The current construction standard for the design of electrical protective equipment, which applies only to electric power transmission and distribution work, adopts several national consensus standards by reference. The proposal would replace the incorporation of these out-of-date consensus standards with a set of performance-oriented requirements that are consistent with the latest revisions of these consensus standards and with the corresponding standard for general industry. Additionally, OSHA is proposing new requirements for the safe use and care of electrical

protective equipment to complement the equipment design provisions. The new provisions, which will apply to both construction and general industry work, will update the existing OSHA industry-specific standards and will prevent accidents caused by inadequate electrical protective equipment.

Development of the Draft Standard

Reasons Why Action by the Agency is Being Considered

Deaths from electrocution represent 4.5 percent of all occupational fatalities. This hazard is unusually strong in electric power generation, transmission, and distribution work. Electric power generation, transmission, and distribution workers routinely work with lines at voltages where a single inadvertent touch can result in death. That touch can be a brush with a part of the body, or contact with a piece of non-insulated equipment, or even be the result of standing in contact with a piece of equipment such as a truck whose derrick makes contact with an active line. Death may come directly from electrocution or indirectly from severe burns.

Given these hazards, it is not surprising that OSHA estimates that there are an average of 68 fatalities a year associated with electric power generation, transmission, and distribution work, including both construction and maintenance work. The revised OSHA standards will substantially reduce fatalities and injuries among employees, and will eliminate significant financial and emotional burdens suffered by family members and many other people associated with these cases. Preliminary estimates indicate that as a result of this rulemaking, 17 fatalities could be avoided annually by full compliance with the proposal.

This estimate does not include the effects of use of protective clothing for arcing situations or full-body safety harnesses for fall protection. OSHA estimates that the average number of electric utility burn accidents a year is at least 8, leading to 12 nonfatal injuries and 2 fatalities per year. Of the reports indicating the extent of the burn injury, 75 percent reported third degree burns. Proper protective clothing is expected to reduce the number of fatalities and the severity of these injuries.

Requiring the use of full-body safety harnesses instead of safety belts is also expected to reduce fatalities and injuries among affected workers. There are several problems with safety belts. First, they are more likely to result in serious injury during a fall because they place greater stress on the workers' body. Second, safety belts virtually eliminate the possibility of self rescue after the fall, and increase the probability of serious internal injuries as the worker hangs suspended. Studies performed in Europe and by the US Air Force indicate high risks associated with the body belt both in fall arrest and suspension modes. Third, it is harder for supervisors to determine visually if the worker is using fall protection when belts are used. By contrast, it can easily be seen from a distance whether a harness is being worn. Finally, there is a risk that a worker could slip from a body belt and fall.

As a result of these considerations, many US employers have already switched to requiring harnesses rather than belts. French and German worker safety standards prohibit the use of body belts, and British standards impose major restrictions on their use. An average of about fifteen fatalities annually have involved falls from aerial lifts; in these cases, the employees were not wearing a belt or a harness. (However, there was one fatality in which an empty body belt was found suspended from an aerial lift.) Employees who rely only on a belt for fall protection have been determined to be at significant risk of serious injury, as OSHA has already established in its extensive record on the subject as part of the final rule for fall protection in construction.

The existing OSHA standards for the construction of electric power transmission and distribution systems are 30 years old and inconsistent with the more recently promulgated standards addressing repair and maintenance work. The credibility and integrity of OSHA standards and of OSHA's leadership role in occupational safety and health would be jeopardized by not updating these important standards. If OSHA cannot point to its own standards as being the best primary source of reference for determining proper safety and health procedures, then the Agency's respect and authority, as well as its ability to promote and improve safety and health, may be undermined. These dated construction standards are particularly confusing because the standards for maintenance of electric power generation, transmission, and distribution facilities were updated in 1994.

This rulemaking was initiated in 1997 as part of the reinventing government effort. It was intended to reduce burden or duplication, and streamline requirements. OSHA believes that the updated standards are easier to understand and to apply and will benefit employers by facilitating compliance while improving safety.

Stakeholder Involvement

During the year 2000, OSHA held stakeholder meetings in order to solicit input and comments from potentially affected entities. OSHA raised and asked for suggestions regarding several issues, including provisions related to clothing, fall protection, training, host employer and contractor responsibilities, grounding, and others. The comments of participants in these meetings helped guide OSHA in shaping the nature of the provisions of the draft proposal.

3. Summary of Comments from Small Entity Representatives (SERs)

On May 1, 2003, the Panel for this rulemaking was convened for purposes of soliciting comments about the draft proposal and its associated estimated impacts from potentially affected small entity representatives (SERs). The Panel provided the SERs with a copy of the draft proposal, a summary of OSHA's preliminary estimates of the economic impacts, costs, and benefits of the draft proposal, the Preliminary Initial Regulatory Flexibility Analysis (PIRFA), and a list of issues on which the Panel was specifically seeking the advice and recommendations of affected small businesses.

The Panel held teleconferences with the SERs on May 14th and 15th which allowed for interactive discussion. After these teleconferences, the Panel received written comments from several of the SERs. The remainder of this section summarizes the oral and written comments received from the SERs, consolidated by the particular issue of the draft proposal being addressed. The complete written comments submitted by the SERs are included in Appendix C of this report.

Host Employer / Contractor Provisions

The draft proposal includes provisions regarding certain host employer and contractor responsibilities. In particular, the draft proposal requires the host employer to evaluate contractors' safety performance and use that information in the selection of contractors. Host employers must also inform contractors of hazards that the contractor might not be able to recognize. And host employers must report observed violations of the standard to the contractor, take appropriate measures to correct the violations, note a contractor's failure to correct violations, and consider any such failures in subsequent evaluations.

The SERs generally indicated that the requirements of these provisions are considered to be a signficant burden, and that it was unclear how compliance could be achieved. It was also not clear to the SERs, from reading the draft, who would be required to bear what specific responsibilities, and what obligations would be implicitly imposed in order to fulfill those responsibilities. One SER concluded that the "host-contract provision is presumptively unlawful." [Golon, p.9].

According to one SER, the term host employer is one that utilities are in strong disagreement with and the concept is basically flawed. The SER stated the belief that the draft provisions are not consistent with good business practices, and create another layer of inefficient bureaucracy. The SER also stated that the role of demanding safety compliance from contractors is best left to OSHA, and that utilities should not have the responsibility of record verification and recordkeeping. Furthermore, the SER expressed concerns that the liability exposure to the utility would be greatly increased by the provisions, and that they would force many utilities to employ new methods to do what is now contractors' work. As a result, the SER asserted, the very livelihood of many diligent contract firms would most certainly be at risk due to the many implications of the provisions.

Another SER expressed concern that the regulatory requirements would transfer responsibilities for overseeing and directing work from one employer to another. As explained by the SER, if an employer is required to tell employees of another employer how to do their work, then the legal implications can involve the assumption of legal responsibilities and liability for the actions of those employees. In effect, according to the comments from the SER, under other applicable laws and rules, such as the Fair Labor Standards Act and Internal Revenue Service regulations, the employees of another employer could potentially be considered direct employees, with various associated legal consequences and obligations.

One SER also commented that the host employer responsibilities will require significant changes in how some utilities hire and monitor contractors.

Many SERs stated that the requirements for communications between host employers and contractors were too vague. The SERs of host employers and contractors expressed a concern that it was not possible to know exactly what would be expected in order to be in compliance. Many SERs questioned what kind or type of information would be required, under what circumstances requirements would apply for different business relationships and arrangements, at what level the communication should take place between companies, what underlying responsibility to seek out and gather the necessary information would be imposed, what level of knowledge would be presumed or required for different businesses, how the requirements would apply to employers with different degrees of expertise in different aspects of work, etc. One example was provided by a SER in which Company A was held responsible for damages caused by an employee of Company B simply because an unqualified employee of Company A had been at the site hours earlier for an unrelated purpose.

Several SERs expressed concerns regarding the possibility that, even if OSHA explained the minimum required to meet the requirements, implicit additional obligations would still be imposed by the language of the provisions through other legal actions involving responsibilities for due diligence and good faith in conducting evaluations, observations, and communications.

SERs generally agreed that host employers should share information they have about hazards with contractors, that generally this type of information sharing takes place, and that such communication is in the interests of host employers and contractors. A SER added that occasionally not all information is shared, such as potential hazards related to the presence of PCBs or asbestos. Most SERs felt that usually all relevant information needed by the contractor for the performance of work should and does get shared as part of the bidding process.

Some SERs expressed agreement with the principle, when hiring contractors, of taking some initiative and precautions and conducting prudent oversight regarding the safety practices of the contractors. However, these SERs argued that such principles should not be embedded into safety standards as they tread into areas of business relationships

involving a myriad of complications with different and evolving arrangements. The SERs felt that these problems cannot be adequately addressed in a rule or be reconciled with other applicable legal frameworks. In addition, it was seen by the SERs as simply a matter of fairness that each employer be individually held accountable for complying with safety requirements affecting their own employees.

The SERs shared a general perception that these draft provisions would change the relationship between host employers and contractors. Many SERs felt that, under the language of the draft, hiring a contractor would mean taking responsibility for both the quality and the verification of their whole safety program, including how much training and of what types each of their crew was provided. Many SERs stated that evaluating the contractor and their program would not necessarily be sufficient to fully comply with the draft provisions as written because crews and employees can change over time. The SERs had the impression that in order to achieve compliance with the draft, lots of documentation would need to be requested, generated, and copied. In addition, SERs felt that inspections would be necessary to ensure good faith compliance with the provisions, and that checks, investigations, and confirmations would be necessary to assure that the information provided was in fact accurate. The SERs explained that validating employee history and training is difficult enough for employees hired directly, but would be very difficult or impossible for employees of another company, especially because determining which particular employees would be assigned to a particular job may not be possible in advance.

According to the SERs, many host employers currently do get some relevant information on safety practices and backgrounds from potential contractors. Several SERs representing both host employers and contractors reported that they and other businesses they know of in the industry frequently follow a process in which contractors must be "pre-qualified" as part of bidding for a job; potential contractors must submit safety information for this purpose. Specific information currently communicated among some employers using such a process includes numbers of accidents experienced, types of training provided, and copies of safety programs.

One SER mentioned the concern that assembly and communication of information required under the draft provisions would be very difficult to track. Most of the SERs expressed a concern that these provisions may affect who is considered responsible and who is at fault if something happens. According to some SERs, the requirements may undermine language included in many contracts that specify responsibilities and ensure certain parties are held harmless.

The SERs felt that the provisions give the sense that the host employer is being "deputized" to enforce standards. Many SERs believed that the requirement to provide feedback on observed violations implies a burden to inspect and investigate, or at least an obligation to observe and judge, how the contractor does the work. The SERs felt that this was a common sense interpretation, and that this interpretation would be applied in other legal proceedings such as tort actions, even if OSHA attempted to clarify that such actions would not be necessary to achieve compliance with the provisions. The SERs

indicated that as a result of the language of the draft, additional liability may be introduced simply by watching the work of the contractor, even if the watching is done by an unqualified employee who happens to be on the job site for an unrelated reason.

Several SERs complained that the draft provisions would effectively be requiring private businesses to determine whether or not the actions of other private businesses constituted an OSHA violation. One SER felt that host employers should not be required to and could not necessarily determine what OSHA would consider a violation, and that a requirement to report violations would put host employers in an impossible situation. One SER felt that from the contractors' point of view, it would also not be fair for a contractor to be officially notified that it was in violation of an OSHA standard by another employer if OSHA had not actually determined itself that there indeed was a violation.

According to one SER, when some employers voluntarily go to greater lengths in achieving compliance, then other employers will be seen as guilty for doing less when more could have been done and was being done by others.

Some SERs felt that the draft provisions by making "inspectors" out of host employers would dissuade host employers from using contractors. These SERs also believed that some contractors would thus possibly not be able to stay in business.

Many of the SERs felt that it should not be OSHA's place to say how to qualify contractors. Several SERs further felt that if OSHA insists on making requirements in this area, then the standard should describe exactly what information is required to be communicated and how it should be used.

One SER reiterated that the language of the draft, in many different provisions, was too vague to determine what would be necessary to achieve compliance. The SER suggested that the requirements should be simplified to state specifically what is required. The SER indicated that companies and employees may lose respect for standards if they cannot understand what is required.

The SERs generally felt that a lot of communication between host employers and contractors currently takes place, and that in principle such communication is a good thing to have take place. However, the SERs also felt that there would be a real problem with the imposition of a requirement to document communications and with the additional liability associated with requirements to obtain and communicate vague and broad categories of information. According to the SERs, the host employer would bear the burden of increased civil liability under the draft proposal. These SERs stated that there would still be an increased burden on host employers, resulting from the provisions of the draft, to observe the performance of the work of contractors and report violations of safety standards.

Several SERs stated that it is unclear from reading the draft how, and to what extent, host employers would be required to check and confirm the training and experience of

contractor employees. Questions were raised by several SERs as to how this would be expected to work if many contractor crews were needed on short notice, and how accurate and current information about the training and experience of contractors and subcontractors would be expected to be obtained and verified.

Comments made and reiterated by many of the SERs included the point that often contractors are more familiar with specific hazards than the host employer. One SER explained that requiring the host employer to notify the contractor of hazards is contrary to the purpose of hiring a contractor. Several SERs suggested that the host employer may not know or be able to know what hazards the contractor does not know about.

The SERs felt that there should be no duty for the host employer to inspect or be able to recognize violations, and that the employees of contractors are generally not supervised by host employers. According to the SERs, this requirement greatly expands the multi-employer citation policy and is inconsistent with it, as under the draft provisions the host employer would also be required to take action to correct violations.

A SER from the line clearance tree trimming industry concluded that, as written, the provisions in the draft regarding duties between host employers and contractors do not apply to tree trimmers. The SER strongly supports this, believes this should be clarified and stated more explicitly to avoid possible confusion, and would strongly object to the application of such provisions to their industry.

Clothing Requirements

The draft proposal requires that the employer assess whether employees are exposed to hazards from flames or electric arcs. If employees are exposed, the employer must estimate the maximum heat energy that employees would face and must select clothing appropriate for that energy level. In addition, employees must wear flame-resistant clothing under certain conditions (that is, conditions where ignition of flammable clothing is most likely). The draft proposal includes an appendix to help employers comply with this provision.

Several SERs stated that the draft proposal appears to expect employers to do complex calculations to determine the appropriate clothing for each job, and that this would be almost impossible. One SER explained that he makes a determination based on a worst case scenario and then applies the results to all work on the whole power system. Another SER stated that he provides flame resistant apparel for all of their employees, but they do not make the determinations that would be required by the draft proposal.

One SER commented that their employees do not see a need for flame resistant apparel, and that there have been no instances in 2.5 years in which it would have made any difference in preventing an injury to an employee. The SER stated that the heavy clothing can be a burden on employees in hot and humid weather.

Another SER stated that they had completed 7,500 separate projects in the past year (some of which lasted under an hour, others days). For this SER, complying with the draft would require a tripling of their engineering staff only to do the calculations and determinations associated with the clothing provisions.

Several SERs suggested that before OSHA requires an increase in the amount of flame resistant apparel employees are required to wear, the Agency should make sure that it is addressing a real problem. It was suggested by the SERs that the actual risks to employees primarily result from a complete lack of wearing flame resistant apparel, and that there was no known evidence that employees were being injured simply from not wearing enough flame resistant apparel. Thus, according to these SERs, better compliance with the existing 1910.269 standard would do more to reduce actual risks to employees than making the standard stricter. The SERs suggested that the standard should simply require employers to provide "appropriate" flame resistant apparel and that the standard could also prohibit certain clothing that increases injury risks.

One SER stated that almost every job involves potential electric arc hazards, and that electric arcs can occur even while performing work on deenergized systems. The SER indicated that the calculations to determine the proper clothing as required by the draft provisions would require some small utilities to hire outside consultants, and that performing these calculations would be prohibitively expensive and difficult. In addition, the SER mentioned that there are many different ways the calculations could be made and it is unclear which would be considered correct. The SER also suggested that the potential liability associated with making such calculations may inhibit companies and individuals from offering to provide calculations.

Many SERs expressed their opinion that the extent of flame resistant apparel required by the draft can be too hot to work in and could create heat exhaustion issues. One SER also stated that union workers on the West coast are adamant that they will not use flame resistant clothing. Another SER indicated that in the State of Washington, no flame resistant clothing is used.

One SER explained that a utility in Nevada uses flame resistant apparel 100 percent of the time for all workers. Another SER stated that a North Carolina utility uses flame resistant apparel and that there have been employees there who have been thankful for having avoided burns as a result. But the SERs also expressed a concern that requiring clothing to the point of preventing any risk of second degree burns may be too stringent, especially in light of other risks widely considered acceptable. For example, seat belts are considered adequate protection even though better protection such as that provided in race cars is available to better protect workers from injuries and fatalities.

Fall Protection

Fall protection equipment would be required to be used in accordance with 1926.502(d), OHSA's construction standard for fall arrest equipment. The proposal would permit fall arrest equipment to be used without the anchorage specified by the construction standard

if the equipment is rigged as work positioning equipment and if the employee can free fall no more than 0.6m (2ft). Employees performing work covered by 1910.269 from aerial lifts who are not already required to do so by other standards would be required to use a fall arrest system or a tethering or restraint system

One preference expressed by more than one SER was that the employer should have the ability to choose the appropriate type of fall protection for the circumstances faced. These SERs believe that employer experience and judgment should determine whether a harness or belt should be used.

According to research conducted by a trade association and presented by a SER, there have been no fatalities involving aerial lifts that would have been prevented by using one kind of fall protection rather than another. Fatalities occurred due to the lack of using any fall protection or due to other factors for which fall protection was not an issue.

Some SERs felt that the draft proposal imposed a requirement for a 2 foot limit on lanyard length and thus would unduly restrict the ability to move and inhibit work. In addition, the SERs were concerned that such a requirement may reduce safety, because in order to comply it may be necessary to anchor to the bucket instead of the boom. The SERs explained that some accidents cause the bucket to separate from the boom, and that employees would be better protected by being anchored to the boom.

Several SERs agreed that a 2 foot limit would be a problem, in that the movement and reach of employees would be compromised. The SERs stated that the fall restraint requirements need to be flexible with respect to the nature and location of the anchorage point.

One SER explained that the company uses full body harnesses for all of their employees, but that the employees have raised a lot of complaints. The company has experienced a bigger problem than with the use of belts with employees who do not use or attempt not to use the harnesses. The SER explained that in the tree trimming industry generally, more people use belts than use harnesses, primarily because the belts are easier to use.

Another SER gives employees a choice whether to use belts or harnesses; this SER reported that about 80 percent of the employees choose harnesses.

The SERs generally agreed that body harnesses are not as adjustable as body belts. Thus, as described by the SERs, in order to have enough to provide all employees with one, the use of harnesses would require purchasing additional supplies to ensure that one of the right size would be available for all employees.

According to one SER, a possible problem associated with wearing a safety harness as opposed to a safety belt is that while on the ground, a harness can more easily be snagged and potentially pull an employee into a wood chipper. Another potential additional hazard, as described by a SER, is that a harness can be more easily snagged on branches

when working in a dense tree; as a result, the employee could be pulled out of the bucket when it is lowered.

One SER expressed the belief that most problems with fall protection for employee safety arise not from the particular type of protection used, but from whether or not any protection is used. The SER stated that because of the difficulties associated with the use of harnesses, the requirement to use harnesses potentially increases non-compliance and thus may reduce safety overall.

One SER concluded that for line clearance tree trimmers, "adding restrictive fall protection requirements will decrease safety and increase costs." [Golon, p.11].

The SERs involved in electric power transmission and distribution work generally stated that they use body harnesses for fall protection and do not allow employees to use only body belts. One electric power contractor stated that they use harnesses exclusively and do not have any problems with them. These SERs stated that they did not know why anyone would do anything other than use harnesses because harnesses are the right way to go. One SER provided an example from experience in which a harness saved one employee, whose back could have been broken had he been relying on a belt.

Consistency Between General Industry and Construction Standards

Both the general industry standard and the construction standard address virtually the same types of work. The distinction often hinges only on whether lines or other parts of the power system are being repaired or replaced with similar components (covered by general industry) or are being newly installed or replaced with substantially upgraded components (covered by construction). Sometimes different portions of the work on the same project can fall under each of the two standards. The draft would bring consistency between the standards.

Several SERs expressed the view that there should only be a single standard with identical language for both general industry and construction to avoid unnecessarily burdensome complications for compliance.

A point made by the SERs was that if all of the work and equipment for two projects is the same, then there should not have to be two different standards. The SERs felt there should only be one standard to have to refer to and comply with across similar types of work done by the same people with the same tools. One SER added that if for legal reasons a standard is needed in both 1926 and 1910, they should be identical.

Compliance with 1910.269 in Construction Work

Several SERs indicated that they comply with the standards applicable to general industry work (1910.269) for all of their work, including construction work. One SER added that they also expect compliance with 1910.269 for all work, including construction work,

from any contractors that they use. These SERs also indicated that they consider themselves among the best employers in the industry in terms of safety.

Most of the SERs agreed that good companies follow 1910.269 for all work including construction work. But some SERs also indicated that some companies intentionally follow 1926 for construction work because costs can be reduced. Generally, the SERs believe that the standards for general industry and for construction should be identical to avoid confusion and unnecessary extra burdens of determining how they differ and when each one applies.

One SER estimated that about 10 to 30 percent of contractors involved in electric power transmission and distribution work may exclusively do construction. One SER stated that they do not know of any contractor firms that do exclusively construction work.

The SERs stated that companies that are in compliance with 1926, but not with 1910, would be greatly affected by the draft. According to one SER, just meeting the requirements of the existing 1910.269 would have a big impact on these firms. Another SER explained that about 30 to 40 hours of training per employee may be necessary for firms complying with 1926 but not with 1910, and that other impacts would also be involved. Another SER reiterated that when the current 1910.269 came into effect in 1994, their employees were given five days of training to meet the new requirements.

Training

The training requirements permit employers to provide a reduced amount of training for hazards that are relatively low risk and ensure that a greater degree of training focuses on hazards posing the greatest risk to employees. Employers must train each employee in the knowledge necessary to recognize electrical hazards to which the employee may be exposed and the skill and techniques necessary to control or avoid hazards. The proposal also eliminates the requirement in 1910.269(a)(2)(vii) for employers to certify the training received by employees.

One SER commented that the estimated time of additional training needed to comply with the draft provisions was too low. Another SER explained that not all employees understand lessons at the same speed or level, and that many employees need a lot of retraining. Several SERs stated that training takes a lot of time, including the need to organize and prepare training materials.

One SER stated that a realistic estimate of the amount of time employees would need to be trained would be ten to twelve hours initially, plus four to six hours refresher training annually. Currently employees at one SER's company are provided with the ten-hour OSHA training plus an additional ten hours of safety training. According to a SER, the cost of the ten-hour course is about $400 to $600 per employee. Another SER estimated that each hour's worth of training materials takes about eight to ten hours to put together. Another SER stated that new employees receive twelve hours of training, and then they

get refresher training as needed. An apprenticeship program run by one of the SERs takes a full year.

Several SERs described their procedures for keeping records, indicating that records are kept for all training and the training received by each employee is tracked with standard computer software. The SERs also indicated that documentation may be a problem if an employee received training from a previous employer. One SER claimed that differentiating training needs for each employee would be a burdensome logistical problem.

One SER explained that the training requirements of the draft will require several revisions to existing training programs. However, according to the SER, these new regulation changes can be easily included in future scheduled training sessions. In addition, the SER stated that utilities and contractors adhering to the training requirements in the existing 1910.269 will experience little impact. On the other hand, the SER felt that companies who have not provided the training required by the existing 1910.269 will experience a substantial impact in providing this training for affected employees. However, this impact was considered by the SER to be no different than that experienced by companies required to follow 1910.269 when the new standard was implemented in 1994. The SER also believes that the additional training requirements in 1910.269 that went into effect in 1994 have substantially improved the safety of workers, and that the corresponding changes in the draft construction standard will have a very positive effect on the safety of contractor employees.

A couple of SERs explained that the extent of training of employees is hard to determine and to keep track of, and it is often difficult to evaluate the level of training of new employees. The SERs further explained that many very skilled employees do not have any written records of their training and knowledge gained through experience. In addition, according to the SERs, some employees with documented training do not have appropriate level of skills or experience for doing work. The SERs indicated that utilities in some areas are beginning to work on efforts to develop tests to recognize ability levels; however, this is complicated as there are different kinds of linemen, requiring different types of training, such as for work on transmission lines versus low voltage overhead lines, etc. The SERs stated that different companies provide different types and degrees of training and that it is not easy to evaluate or determine what kind of training an employee has really received.

Several SERs believe that it is not clear what the training requirements of the draft really add to existing training requirements, and that it is not clear how the employer would comply. The SERs felt that the draft proposal does not make clear what specifically is required to demonstrate compliance.

A few SERs expressed the opinion that the provision in the draft stating that "the degree of training provided shall be determined by the risk to the employee" should be removed. The SERs felt that this sentence should be dropped from the proposal since it is very vague and does not provide any quantitative value training. One SER also felt that the

existing training paragraph in 1910.269 is much more clear in that it requires the type and amount of training needed for each employee.

One SER noted that the subject of equipotential grounding will require a great deal of training to ensure the understanding of and compliance with the rules.

Job Briefings

The proposal would require the employer to provide the employee in charge of the job with available information necessary to perform the job safely. This information would be used by the employees to carry out the job briefing that is already required by the general industry standard.

Several SERs stated that some type of job briefing is commonly performed for each job done. A SER estimated that for a two to four hour job, the job briefing might take twelve to fifteen minutes. According to another SER, the communication of hazards about a particular job can take anywhere from a couple of minutes to 15 to 20 minutes. Another SER indicated that the requirements in the draft regarding job briefings are generally not a problem, unless there would be an expectation of documentation.

One SER expressed a concern that the additional job briefing requirements in the draft would add another layer of briefings beyond those currently required for most jobs, and that it is unclear what exactly would be required in some particular situations. The SER explained that if a company does not operate out of a central shop, then the employee in charge, the supervisor, and the one assigning the job, may be in different locations with different degrees of knowledge about the job than what the draft provisions appear to assume. One SER felt that the provisions seem to require that if the supervisor in the central office does not know about the specific aspects of a job site, he or she would have to travel to the site in order to inform the crew about the job. This requirement, as interpreted by the SER, would be unrealistic and would require a lot more time.

One SER explained that their work is in the field often many miles away from the office and away from the employer's control. The SER said that therefore it "is impossible for us as the employer to give the individual in charge all of the details of the project that might affect his safety. … To comply with this as written, I feel is a physical impossibility, as we (employers) can't be in enough places at once to implement this." [Woodings, p. 7].

Another SER stated that the job briefing requirements in the draft are consistent with current practices in their utilities. However, the SER also stated that there are many companies who do not follow these job briefing provisions. One SER believed that five minutes for the additional job briefing requirements per project would be a reasonable estimate of the amount of time that would be involved. The SER added that some briefings will take more time, others will take less.

Grounding

The proposal would allow the employer to reduce the size of protective grounding equipment under certain conditions, and would permit protective grounds to be connected and removed without the use of a live-line tool under certain conditions.

One SER pointed out that in paragraph 1926.964(b)(4) of the draft, the new additional grounding requirements should be removed, and the existing standard should be left how it is. According to this SER, multiple grounds can create hazards, and these hazards recently resulted in the death of a worker.

Automated External Defibrillators

Paragraph (b)(1) of existing §1910.269 requires CPR training to ensure that electric shock victims survive long enough for defibrillation to be efficacious. Paragraph (b)(1) of proposed §1926.951, on page 22 of the Subpart V draft, proposes the same requirement for construction. The standard relies on emergency responders rather than the employer to provide defibrillation, which is used to revive a victim who has suffered ventricular fibrillation. The draft proposal would not change this. However, in the preamble to the proposal, OSHA intends to raise the issue of whether the employer should be required, in §1910.269 and Subpart V, to provide automated external defibrillators (AEDs).

The SERs explained that employees in the industry commonly already receive CPR training, which generally also includes training in the use of AEDs. Several SERs explained that they have installed AEDs in their offices but do not generally provide them in the field; one SER mentioned plans to gradually put them in trucks as a benefit to the community. A SER estimated that emergency medical crews usually have a response time of four to twenty minutes. Another SER estimated that about 20 to 30 percent of the companies in their area may have an AED in the office, and AEDs are slowly being deployed into the trucks. However, the SER added that he believed AEDs are expensive and only have a 40 percent success rate, and thus he did not find a convincing case that they should be required.

Compliance Cost and Benefits Estimates

A SER questioned the basis for estimating the number of sets of flame resistant apparel (FRA) that would be provided to employees to comply with the draft proposal. OSHA had estimated two sets per employee per year for small establishments and five sets per employee every five years for large establishments. One SER providing FRA purchases 11 sets per employee. Another SER supplies employees with six sets. The clothing allowance given employees by one SER for FRA is about $830 annually. For another SER, the cost of outfitting a new employee with FRA amounts to $1,200. Another SER provides five shirts per employee that cost about $50 to $55 per shirt and last about six to nine months. Providing flame resistant shirts costs about $360 per year per employee

plus laundering costs according to one SER; regular jeans are used for pants. A SER estimated that flame resistant jackets cost $150 each and last several years; switching jackets are shared as needed among employees. One SER estimated that the annual cost for flame resistant clothing for a lineman would be $405 per year including laundering. Several SERs agreed that many companies contract out clothing supplies and laundering with uniform companies. One SER stated that when the heat index is high, wearing FRA cuts productivity by 50 percent, and requires an increase in the work force by 30 percent.

One SER expressed concern that if the provisions of the draft regarding clothing requirements were not stricken, then "the added burden and expense of the clothing may put many small contractors out of business." The SER added that "the negative effect you have on local economies you will only see in unemployment figures, we will see in their faces." [Brockman, p.8].

A SER agreed with OSHA that 1.5 hours for each employee and 27 minutes per supervisor of additional training per year is reasonable for employees who are currently provided the training required by the existing 1910.269 standard. The SER also estimated that employees not currently provided with the training required by the existing 1910.269 standard will require 24 hours of training per year.

One SER was concerned that small contractors may go out of business if they are not able to meet the financial burdens associated with documenting training, or if an injury to one of their employees resulted in losing further business.

A SER also agreed that the estimate of five minutes for the extra job briefing provisions per project was reasonable. The SER explained that some briefings will take more time, others will take less.

One SER estimated that about 50 percent of the work is performed on deenergized lines and equipment. This estimate is relevant to the calculation of compliance costs for requirements that depend on whether or not work is performed on energized lines and equipment, such as the costs associated with the determination of the extent of flame resistant apparel to be worn by employees.

One SER agreed that the specific unit cost estimates provided by OSHA are within reason, and that the information in the PIRFA seems reasonable and appropriate.

Some SERs reflected the view that a "performance standard" such as this means that even in cases where OSHA does not require recordkeeping, such as for training, many small entities will find recordkeeping useful for internal purposes and virtually the only way they will be able to demonstrate compliance with the rule. The SERs also felt that performance-oriented provisions can create confusion as to what exactly is required to achieve compliance. The SERs were concerned that OSHA may not have adequately recognized such effects in the development of the draft and that OSHA may not have incorporated such effects into its compliance cost estimates.

One SER estimated that about 10 to 30 percent of contractors involved in electric power transmission and distribution work may exclusively do construction. One SER stated that they do not know of any contractor firms that do exclusively construction work.

The SERs stated that companies that are in compliance with 1926, but not with 1910, would be greatly affected by the draft proposal. According to one SER, just meeting the requirements of the existing 1910.269 would have a big impact on these firms. Another SER explained that about 30 to 40 hours of training per employee may be necessary for firms complying with 1926 but not with 1910, and that other impacts would also be involved. Another SER reiterated that when the current 1910.269 came into effect in 1994, their employees were given five days of training to meet the new requirements.

According to one SER, the cost of the typical full body harness and deceleration lanyard is between $125 and $150, compared to $50 to $75 for a body belt and lanyard. The SER also stated that the harness is not as adjustable in size as a body belt, so the employer might have to purchase 25 to 33 percent more harnesses than belts to accommodate different size employees.

Regarding the consideration of contractor safety performance by host employers, one SER estimated that there "would be more than 90 minutes spent verifying and comparing the initial data supplied not including verification of the continuing required training and certifications of the contractor's employees by the host." [Coggin, p.4].

Some SERs suggested that OSHA's analysis might have included fatalities in municipal facilities that may not be covered by the standard. Others suggested OSHA should discuss the extent to which the existing general industry standard had resulted in reduced fatalities and injuries, and how this compares with OSHA estimates of how many fatalities and injuries would be prevented by the proposal. Further, one SER pointed out that full implementation of 1910.269 was not achieved until 1997, since OSHA was still addressing industry groups on the new requirements as recently as 1997.

4. Panel Findings and Recommendations

Costs and Impacts

General Comment: The SERs generally felt that OSHA had underestimated the costs and may have overestimated the benefits its preliminary economic analysis. The Panel recommends that OSHA revise its economic and regulatory flexibility analysis as appropriate, and that OSHA specifically discuss the alternative estimates and assumptions provided by SERs and compare them to OSHA's revised estimates.

Costs of Coming into Compliance with General Industry Requirements. In its economic and RFA analyses, OSHA assumed that all affected firms apply existing 1910.269 to construction related activities, even though not required to do so. The reason OSHA made this assumption is OSHA thought that all affected firms are either covered solely by 1910, or engage in both 1910 and 1926 activities, and find it easiest to adopt the general

industry standard for all activities. SERs confirmed that most firms do in fact follow 1910.269. However, they also pointed out that there are some firms that are engaged solely in construction activities and thus may not be following the 1910 standards. The Panel recommends that OSHA revise its economic and regulatory flexibility analyses to reflect the costs associated with some firms coming into compliance with 1910.269. The SERs also reported that compliance training under 1910.269 is extensive. One SER estimated that in excess of 30 hours per employee is necessary in the first year. The Panel recommends that OSHA consider the SER comments on training and revise its estimate of training costs as necessary.

Costs of Maintaining Records not Required by OSHA. Most SERs were concerned that a "performance standard" such as this means that even in cases where OSHA does not require recordkeeping, such as for training, many small entities will find recordkeeping (1) useful for internal purposes and (2) virtually the only way they will be able to demonstrate compliance with the rule. The Panel recommends that OSHA consider whether recordkeeping is necessary to demonstrate compliance with the standard, and, if not, that OSHA explicitly discuss ways in which employers can demonstrate compliance without using recordkeeping.

Costs of Host Contractor Provisions. SERs pointed out that the requirements for observation and follow-up would result in paperwork and reporting requirements not presented in the cost analysis. The Panel recommends that OSHA include such costs and paperwork burdens in its economic analysis as appropriate.

Several SERs argued that requiring consideration of safety records would restrict the number of eligible contractors, resulting in both increased costs and potential impacts on small firms. Several SERs also were concerned that the draft requirement would result in the increased use of methods such as pre-qualification in the hiring of contractors or would increase reliance on favored contractors; the SERs said that both of these effects could result in increased costs and restricted business opportunities, especially for small businesses. The Panel recommends that OSHA study the extent of such costs and impacts and solicit comment on them.

Cost of Flame Resistant Clothing. Several SERs questioned OSHA's estimates of the number of sets of flame resistant clothing an employee would need, and its assumptions and cost estimates. The panel recommends that OSHA reexamine its assumptions and cost estimates in light of these comments.

OSHA Estimates of Benefits of the Draft. Many SERs questioned whether the new revisions to 1910.269 would in fact save any lives or prevent any accidents. Some commented that they had never seen an accident that would have been prevented by any of the new provisions. Some SERs suggested that OSHA's analysis might have included fatalities in municipal facilities that may not be covered by the standard. Others suggested OSHA should discuss the extent to which the existing general industry standard had resulted in reduced fatalities and injuries, and how this compares with OSHA estimates of how many fatalities and injuries would be prevented by the proposal.

The Panel recommends that OSHA provide more documentation regarding the sources and nature of the anticipated benefits attributed to the draft proposal. The estimated benefits should also be reexamined in light of the SER comments and experiences regarding the perceived effectiveness of the new provisions. In particular, OSHA should focus attention on the benefits associated with the provisions on flame retardant apparel, training, host/contractor responsibilities, and fall protection.

Number of Small Entities

There were no comments from the SERs on OSHA's estimates of the number and type of small entities affected by the proposal. However, some SER's pointed out that there may be some small entities that engage in only construction related activities. The Panel recommends that OSHA's estimates of current baseline activities and OSHA's cost estimates reflect such firms.

Description of Proposed Requirements

The following paragraphs provide a summary of the points made by the SERs with regard to specific issues and present the associated Panel recommendations.

Performance-Oriented Requirements. Most SERs were uncertain about how to comply with performance oriented provisions of the proposal, and further, that additional expenses might be required to be confident that they were in compliance with such provisions. The Panel recommends that OSHA study and address these issues and consider the use of guidance material (e.g. non-mandatory appendices) to describe specific ways of meeting the standard, which will help small employers comply, without making the standard more prescriptive.

Host Contractor Issues. Most SERs were highly critical of the host contractor provisions and had trouble understanding what OSHA required. If these provisions are to be retained, the Panel recommends that they be revised. The Panel recommends that OSHA clarify what constitutes adequate consideration of contractor safety performance, clarify what is meant by "observation," clarify how the multi-employer citation policy is related to the proposal, and clarify whether the requirement to communicate hazards does or does not represent a requirement for the host employer to conduct their own risk assessment. The Panel also recommends that OSHA examine the extent to which state contractor licensing could make the host contractor provisions in the proposal unnecessary.

Flame Resistant Clothing and Determining the Need for It. Some SERs questioned the need for flame resistant clothing beyond the existing clothing provisions in 1910.269. Some argued that there was a trade-off between possible decreased injuries from burns and heat stress injuries as a result of using flame resistant clothing. The Panel recommends that OSHA consider and solicit comments on these issues.

Many SERs were uncertain whether OSHA's requirements for determining the need for flame resistant clothing would allow the use of such methods as 1) "worst case" analysis or 2) specifying minimum levels of protection for use when a system does not exceed certain limits. The Panel recommends that OSHA clarify what methods are acceptable to meet these requirements, and specify these methods in such a way that small entities can be confident that they have met the requirements of the standards.

Training. OSHA made some changes to the training provisions in 1910.269, including dropping certification requirements and allowing training to vary with risk. OSHA stated that both of these changes were designed to give the rules a greater performance orientation and to ease compliance. Some SERs felt that these changes might make compliance more complicated by making it less clear what needs to be done. The panel recommends that OSHA clarify the performance orientation of these changes and consider explaining that existing compliance methods would still be considered adequate under the new rules. The Panel further recommends that OSHA examine the requirement that employees demonstrate proficiency and provide examples of how that can be accomplished. The Panel also recommends that OSHA consider the possibility that the proposed draft may introduce costs to small businesses that are uncertain of how to comply with the new performance oriented training provisions.

Fall Protection Requirements. Several SERS argued that the proposal placed restrictions on the length of the lanyard and that these restrictions were unworkable. The Panel recommends that OSHA clarify the intent of the fall protection provisions. Other SERs argued that fall fatalities from aerial lifts were either the result of catastrophic failures in which case fall protection would not have prevented the death, or the result of failure to use any form of fall arrest or fall restraint. Some SERs argued that some workers might find harnesses more awkward than belts and be less likely to wear them. The Panel recommends that OSHA consider and solicit comment on these issues.

Duplicative and Overlapping Rules

This rule was designed by OSHA to eliminate confusing differences between the applicable construction and general industry standards, by making the standards consistent. Several SERs felt this was a worthwhile goal. Some SERs felt that the host contractor provisions of the rule could result in causing contractor employees to be considered employees of the host employer under the Fair Labor Standards Act and under the Internal Revenue Service regulations. In addition, the SERs identified OSHA's multi-employer citation policy as duplicative and overlapping of the host contractor provisions in the proposal. The Panel recommends that, if this provision is retained, OSHA investigate this issue and clarify these provisions to assure that contractor employees do not become direct employees of the host employer as a result of complying with possible OSHA requirements.

Regulatory Alternatives

General: Some SERs were unconvinced about the need for revisions to the existing 1910.269 standard in light of their potential to improve safety beyond what compliance with the requirements in existing 1910.269 would achieve. The Panel recommends that OSHA consider and solicit comment on the regulatory alternative of extending the requirements of 1910.269 to construction, without further modification.

Host Contractor Issues. The Panel notes that these provisions were particularly troublesome for almost all SERs, and that as a result, OSHA should provide either some change or provide extensive clarification to these provisions. The Panel recommends that OSHA consider, analyze, and solicit comment on a variety of alternatives to these provisions, including:

1) Dropping all or some of these provisions.

2) Specifying in detail methods that would be considered adequate for purposes of compliance for those provisions retained.

3) Changing the provision for consideration of safety performance to indicate how employers can be sure they have complied with the provision.

4) Changing the provisions concerning observed violations by:

- Dropping the provision concerning observed violations entirely;
- Changing the provision concerning observed violations to clearly indicate that "inspections" are not required;
- Minimizing the amount of follow-up and responsibility placed on the host employer when a violation is observed;
- Requiring only that the contractor be notified of observed violations (no requirement for subsequent monitoring or evaluation);
- Changing the provision to require observation for the purpose of determining if the contractor is performing safe work practices, and requiring observed violations to be reported to the contractor (no requirement for subsequent monitoring or evaluation);
- Providing explicit language that line clearance tree trimmers are not covered by this provision;
- Specifying that only observations made by a "safety professional" or other individual qualified to identify hazards must be reported to the contractor.

5) Changing the provision for hazard communication to make clear that the host employer is not required to conduct his or her own hazard analysis, but only to communicate such hazards of which the host employer may be aware.

Flame Resistant Clothing and Determining the Need for It. The Panel recommends that OSHA consider and solicit comment on two kinds of options with respect to flame

resistant clothing. First, OSHA should consider the alternative of no further requirements beyond existing 1910.269 for the use of flame resistant clothing.

Second, should the draft requirement be retained in some manner, OSHA should consider and solicit comment on one or a combination of alternative means of determining how much protection is needed or required. These alternatives should include:

1) Allowing the employer to estimate the exposure assuming that the distance from the employee to the electric arc is equal to the minimum approach distance.

2) Providing tables showing heat energy for different exposure conditions as an alternative assessment method.

3) Specifying a minimum level of protection for overhead line work (for example, 10 cal/cm^2) for use when the system does not exceed certain limits as an alternative to hazard assessment.

4) Allowing the employer to reduce protection when other factors interfere with the safe performance of the work (for example, severe heat stress) after the employer has considered alternative methods of performing the work, including the use of live-line tools and deenergizing the lines and equipment, and has found them to be unacceptable.

5) Allowing employers to base their assessments on a "worst case analysis."

6) Requiring employers to use appropriate flame retardent clothing without specifying any assessment method.

Training. Some SERs were concerned that the revised training requirements complicated the question of demonstrating that training had been provided, and that the requirement that training be related to the risk would require additional training, additional documentation, or both. The Panel recommends that OSHA consider making it clear that employers that follow the existing training provisions in 1910.269 will be in compliance with the new rules, and that OSHA clarify alternative methods that would be considered acceptable for demonstrating adequacy of training and the relation of the training to risk.

Job Briefing for the Employee in Charge. In response to comment by some SERs, the Panel recommends that OSHA consider and solicit comment on the issue of whether the additional job briefing requirements are needed and how they can be met in situations in which the employee is working at a distant location.

Fall Protection Requirements. All of the affected SERs felt that the provisions of the rule with respect to fall restraint systems would make it difficult for a person using a fall restraint system to perform the necessary work. The SERs also raised the possibility of safety problems associated with wearing a safety harness as opposed to a safety belt, such as an increased likelihood of the harness being snagged and as a result the employee

being either pulled into a wood chipper while on the ground or pulled out of the bucket when it is lowered. The Panel recommends that OSHA consider and solicit comment on the alternative of making no changes to its existing fall protection requirements. If the provision is retained, OSHA should carefully examine the issue of whether the fall restraint system requirements in the draft make use of fall restraint systems unworkable in aerial lifts. OSHA should also consider the nonregulatory alternative of working with aerial device manufacturers and aerial device users (for example, electric and telecommunications utilities, painting and electrical contractors, tree-trimming firms) in the development of improved fall restraint systems that are more comfortable than existing systems and maintain the appropriate degree of protection for employees.

Appendix A

List of Panel Members
And
Staff Representatives

Small Business Advocacy Review Panel Members and Staff Representatives for the Draft OSHA Standard on Electric Power Generation, Transmission, and Distribution

Robert Burt, Chairperson -- OSHA

Steven Witt -- OSHA

David Wallis -- OSHA

Jens Svenson -- OSHA

Kathleen Martinez -- OSHA

Chaprie Robinson -- OSHA

Garvin Branch -- OSHA

Claudia Thurber -- Office of the Solicitor, U.S. Department of Labor

Bradford Hammock -- Office of the Solicitor, U.S. Department of Labor

John Graham -- Office of Information and Regulatory Affairs, OMB

Cristal Thomas -- Office of Information and Regulatory Affairs, OMB

Dominic Mancini -- Office of Information and Regulatory Affairs, OMB

Thomas Sullivan -- Office of Advocacy, Small Business Administration

Charles Maresca -- Office of Advocacy, Small Business Administration

Radwan Saade -- Office of Advocacy, Small Business Administration

Appendix B

List of Small Entity Representatives

Rich English MountianPower Construction Co. ***Small Construction Firm***	Kevin Fowler Dakota Electric ***Small Electric Utility***
Charlie Tauzin EP Breaux ***Small Construction Firm***	Paul Markworth Wachtel Tree Science & Service, Inc. ***Tree Trimmer***
George Coggin DirversePower ***Small Electric Utility***	Russell Wilson All State Site Prep, Inc. ***Small Construction Firm***
Jody Shea Service Electric Company ***Small Construction Firm***	Tom Golon Wonderland Tree Care ***Tree Trimmer***
Vince Houser Nolin Rural electric Cooperative ***Small Utility Firm***	
Jeff Steele Steele & Associates, Inc. ***Small Construction Firm***	

Brian Erga ESCI ***Small Electric Utility***	James Shill ElectriCities of North Carolina, Inc. ***Small Electric Utility***
Walt Stephens Clark Energy Cooperation ***Small Electric Utility***	Tony Dempsey Owen Electric Cooperative ***Small Electric Utility***
Frank Brockman Farmers RECC ***Small Electric Utility***	Bob McVeigh Southeast Power Corp. ***Small Electric Utility***
Dave McElvein Hartts Electric ***Small Construction Firm***	Chuck Woodings Anderson & Wood Construction Co., Inc. ***Small Construction Firm***
Dan Brewers Big D Electric ***Small Construction Firm***	

Appendix C

Written Comments Submitted by Small Entity Representatives